

Claims:

1. A process for making micro-sized chitosan powder having a degree of crystallinity below about 1% when fully hydrated and being soluble in water across a pH range of from about 1 to about 6.3, the process comprising spray drying an aqueous suspension of nano-sized chitosan.
2. A process according to claim 1 wherein the nano-sized chitosan is soluble across the pH range of from about 1 to about 6.3.
3. A process according to any preceding claim wherein the chitosan powder has a moisture content of less than about 20% and a concentration of impurities of less than about 12% by weight thereof.
4. A process according to any preceding claim wherein the chitosan powder has a volume mean particle size of from about 5 to about 50 μm .
5. A process according to any preceding claim wherein the chitosan powder has a porosity, as calculated by mercury porosimetry, of from about 0.45 cm^3/g to about 0.8 cm^3/g and wherein at least 80% by volume of the pores have a radius of from about 200 nm to about 5,000 nm.
6. A process according to any preceding claim wherein the nano-sized chitosan is obtained by:
 - a) forming an aqueous solution of chitosan by dissolving chitosan in aqueous acid; and
 - b) partially neutralizing the solution formed in step a) by means of a neutralizing agent;wherein the neutralization is carried out to the point at which the chitosan is precipitated to form a suspension and thereafter the suspension is homogenized by subjecting it to high shear.

7. A process according to any of claims 1 to 5 wherein the nano-sized chitosan is obtained by a wet milling process.
8. A process for making nano-sized chitosan by wet milling micro-sized chitosan in a mill comprising an apertured screen and a grinding medium of uniform size and wherein the process comprises at least two size reduction steps wherein the mean size of the medium of the first step is at least three times the mean size of the medium of the second step and wherein preferably the size of the screen apertures in each step is smaller than the corresponding mean size of the medium and at least twice the mean starting size of the micro-sized material.
9. A process according to claim 8 wherein the mean size of the grinding medium used at each step is at least about 5 times greater than the initial mean size of the chitosan to be milled in the corresponding step.
10. A process for making nano-sized chitosan by wet milling micro-sized chitosan having a mean volume particle size of less than 50 μm and less than 5% of particles having a particle size greater than 100 μm .
11. A process according to any of claims 8 to 10 wherein the wet milled chitosan has a mean volume particle size of from about 200 to about 800 nm.
12. A process according to any of claims 8 to 11 wherein the wet milled chitosan has a molecular weight of from about 1,000 to about 7,000 Da.
13. A process according to claim 7 wherein the nano-sized chitosan is obtained according to the wet milling process of any of claims 9 to 12.
14. Micro-sized chitosan powder obtainable according to the process of any of claims 1 to 7 or 13.
15. Micro-sized chitosan powder wherein the Minimum Inhibitory Concentration for *Malassezia furfur* and for *Staphylococcus epidermidis* is less than about 100 ppm.

16. A process according to any of claims 1 to 7 or 13 further comprising the step of sterilising the micro-sized chitosan powder by means of gamma-irradiation or by heat sterilisation.

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17. A method for making an emulsion comprising chitosan, said method comprising the steps of:

d) pre-forming an emulsion;

e) adding chitosan in the form of a powder or suspension; and preferably

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f) adjusting the pH so as to solubilize the chitosan.

18. Use of the micro-sized chitosan powder according to claim 14 for anti-microbial applications.